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ABSTRACT

This paper examines district leaders' theories about teacher learning and change, identifying and elaborating three perspectives--quasi-behaviorist, situated, and quasi-cognitive--based on a study of nine school districts. The quasi-behaviorist perspective on teacher learning dominated among the district leaders in the study. To account for the prominence of the quasi-behaviorist perspective, the author considers how district leaders' work is structured in ways that support a quasi-behaviorist perspective. Specifically, the author considers the manner in which relations between district leaders and teachers are constituted in interaction with state and local policy environments to support a quasi-behaviorist view of teacher learning and instructional change. Based on the analyses of the data (collected through interviews) the author argues that changing the training paradigm that dominates school districts' approach to professional development will necessitate challenging district leaders' theories about teacher learning. Specifically, unless reformers create opportunities for district leaders to develop alternative conceptions of teacher learning and change (that is, conceptions that are different from the quasi-behaviorist perspective), the training paradigm is likely to persist. (Contains the interview instrument in an appendix, tables that describe characteristics of the school districts and district leaders' theories of teacher learning, and 43 references.) (Author)

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District Leaders' Perceptions of Teacher Learning

James P. Spillane

CPRE Occasional Paper Series
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Biography

James Spillane is a Professor in the School of Education and Social Policy and a Faculty Fellow at the Institute for Policy Research, both at Northwestern University. Spillane's work explores the policy implementation process at the state, district, school, and classroom levels, focusing on issues that include intergovernmental relations and policy-practice relations. While building on the policy implementation research tradition, Spillane uses cognitive science research as well as research on teaching to frame his work. One strain of this work explores the substantive ideas local policymakers[] both administrators and lead teachers[] come to understand from state and national reforms. Recent publications can be found in *American Educational Research Journal*, *Educational Evaluation and Policy Analysis*, *Journal of Curriculum Studies*, *Teacher's College Record*, *Educational Policy*, and *Journal of Educational Policy*.

Author's Notes

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Abstract

This paper examines district leaders' theories about teacher learning and change, identifying and elaborating three perspectives quasi-behaviorist, situated, and quasi-cognitive based on a study of nine school districts. The quasi-behaviorist perspective on teacher learning dominated among the district leaders in the study. To account for the prominence of the quasi-behaviorist perspective, the author considers how district leaders' work is structured in ways that support a quasi-behaviorist perspective. Specifically, the author considers the manner in which relations between district leaders and teachers are constituted in interaction with state and local policy environments to support a quasi-behaviorist view of teacher learning and instructional change.

Introduction

The school district plays an influential role in the local implementation of instructional reform (Firestone, 1989a; Spillane, 1996; Spillane, 1999). Specifically, the manner in which state and federal policy proposals are understood and disseminated by the local school district influences their classroom implementation. Implementation failure at the district level is not solely a function of local actors' inability or unwillingness to carry out policy proposals. It is in part a function of implementers' interpretations or misinterpretations of policy messages (Spillane, 1999). Implementation involves district leaders in interpreting the policy message(s). They must decipher what a policy means in order to decide whether and how to ignore, adapt, or adopt policy proposals into local policies and practices. District leaders' interpretations of policy proposals are not all that influence local implementation. School districts are not only interpreters of others' policies, but also makers of their own policies and programs, which are designed to guide teachers' instructional practice. District leaders must figure out whether and *how* to communicate their understandings of the policy message(s) to teachers and school leaders. Rich understandings of the policy at the district level, though necessary, are unlikely to be sufficient for doing that job well. Previous studies of school districts' professional development programs offer a less than optimistic account: professional development is firmly rooted in the training paradigm and focused on the individual teacher, typically via short-term activities that involve little follow-up. They are market-oriented and menu-driven and have little coherence or coordination (Little, 1981; Little, 1993; Miller, Lord, and Dorney, 1994).

In this paper, I explore district leaders' beliefs about enabling the implementation of recent mathematics and science standards at the classroom level. Because the school district is the major provider of teachers' professional development (Moore and Hyde, 1981; Little, et al., 1987; Miller, Lord, and Dorney, 1994), exploring this issue is important in understanding the local progress of state and national standards. After situating the work and outlining my theoretical frame, I describe the research study on which the paper is based. I then present my results. First, I explore district leaders' beliefs about teacher change and learning, identifying and articulating three prominent patterns quasi-behaviorist, situated, and quasi-cognitive. Second, to account for the prevalence of the quasi-behaviorist perspective among district leaders in the study I analyze their work as change agents. Specifically, I explore how structural features of district leaders' work contributed to a quasi-behaviorist perspective on instructional change and teacher learning.

Situating the Work: Theoretical Underpinnings

A cognitive perspective on policy implementation, involving a synthesis of the policy implementation literature and the literature on human cognition and learning, was used to frame the research reported here (Spillane, 1999). A combination of pressure, including bureaucratic control and accountability mechanisms, and support in the form of curricular materials and professional development is thought necessary if teachers are to implement reform proposals (Elmore and McLaughlin, 1988; McDonnell and Elmore, 1987). In the segmented and decentralized American education system, many governmental and non-governmental agencies provide support and sometimes apply pressure to guide teachers' practice. Still, the work setting is possibly the most influential environment for most teachers. Thus, teacher learning about instructional

reform depends *in some measure* on the capability of district leaders— both administrators and lead teachers— to promote teacher learning and instructional innovation.

Ambiguous and inconsistent policy signals that lack authority enable local inattention and local reinterpretation of policy to fit with local agendas (Firestone, 1989a; Firestone, 1989b; Pressman and Wildavsky, 1973). The failure of policy to address specific needs and prescribe the desired changes undermines implementation (Floden et al., 1988; Porter et al, 1988). Aligned policies that are supported by legal and expert authority, might reduce local discretion on implementing policy (Floden et al., 1988; Smith and O' Day, 1991). Pressure though necessary is believed to be insufficient for local implementation (Elmore and McLaughlin, 1988). Financial shortages and the lack of resources including curricular materials and technology necessary to implement the changes advanced through policies undermine implementation. Local actors also need time to adapt policy proposals to their circumstances (Elmore and McLaughlin, 1988; Cuban, 1993; Weatherly and Lipsky, 1977).

Most important, the complex changes in instruction that characterize recent reform proposals will require substantial learning by those who are expected to implement these changes (Cohen and Barnes, 1993). Teachers, often unwittingly, understand new reform proposals to involve only minor changes in their existing conceptions of teaching, learning, and subject matter (Guthrie, 1990; Spillane and Zeuli, 1999). Even if teachers construct the policy message(s) in ways consistent with its intent, they may lack the requisite knowledge to put it into practice. Thus, teachers will have to learn a great deal in order to successfully implement recent reforms that propose tremendous changes in instruction (Cohen and Barnes, 1993; Schifter, 1996). This learning is difficult, both for the teachers and for those who teach them, because the new disciplinary content and pedagogy represent such a tremendous shift from how teachers now teach and how they learned in school. Opportunities for teachers and other local educators to learn about the reform ideas and putting these ideas into practice is a key element of the support necessary for successful implementation.

Learning Theories

To say that teachers will have to learn in order to implement recent instructional reforms, however, leaves much unspecified and under-explored because learning can be conceptualized in different ways. Learning in general, and teacher learning in particular, can mean different things depending on one's conceptual perspective (Richardson, 1999). Thus, in suggesting that implementation involves learning, it is necessary to probe the nature of learning. To do that, I look at theories of learning using a typology developed by Greeno, Collins, and Resnick (1996). They identify three theoretical perspectives on cognition and learning— behaviorism, the cognitive view, and the situative-sociohistoric view.

The behaviorist perspective, associated with B.F. Skinner, holds that the mind at work cannot be observed, tested, or understood; thus behaviorists are concerned with actions (behavior) as the sites of knowing, teaching, and learning. Knowledge is transmitted by teachers and received, but not interpreted, by students. Transmission is the instructional mode. To promote effective and efficient transmission, complex tasks are deconstructed into hierarchies of component sub-skills that must be mastered in sequence from simple to complex (Gagne, 1965). Learning is exter-

nally motivated by reward and requires developing correct reactions to external stimuli. Well-organized routines of activity, clear instructional goals with frequent feedback and reinforcement, and the sequencing of skills from simpler to more complex are important in the design of learning opportunities.

The situative-sociohistoric perspective (Hutchins, 1995; Lave, 1988; Pea, 1993; Resnick, 1991; Vygotsky, 1978) regards individuals as inseparable from their communities and environments. This perspective views knowledge as distributed in the social, material, and cultural artifacts of the environment. Knowing is the ability of individuals to participate in the practices of communities (e.g., the mathematics community). Learning involves developing practices and abilities valued in specific communities and situations. The motivation to engage in learning is seen in terms of developing and sustaining learners' identities in the communities in which they participate. Thus, learning opportunities need to be organized so that they encourage participation in practices of inquiry and learning, support the learner's identity as skilled inquirer, and enable the learner to develop the disciplinary practices of discourse and argumentation. Learning opportunities need to be grounded in problems that are meaningful to the student.

The cognitive perspective (Piaget, 1970) seeks to understand and describe the working of the mind. Knowledge, in this view, includes reflection (Brown, 1978), conceptual growth and understanding, problem solving (Newell and Simon, 1972), and reasoning. Learning involves the active reconstruction of the learner's existing knowledge structures, rather than passive assimilation or rote memorization, with learners using personal resources including their prior knowledge and experiences to construct new knowledge (Anderson and Smith, 1987; Confrey, 1990). In this view, engagement with learning is natural. The motivation to learn is intrinsic. Moreover, extrinsic motivators can undermine intrinsic motivation (Lepper and Greene, 1979). Learning activities engage students' interest and prior knowledge, sequence their conceptual development, and introduce students to the core principles of a domain. This view of learning resembles what Richardson terms the normative re-education perspective on teacher learning in which change is enabled through reflection on one's beliefs and knowledge.

To summarize, district leaders' support of teachers' efforts to implement mathematics and science standards will depend on their understanding of the instructional ideas advanced through the reforms. District leaders often construct understandings of the policy message(s) that miss or "miss-construe" the spirit or intent of the message(s). One recent study of the local implementation of state and national standards showed that although district leaders understood the mathematics standards as representing change and were willing to implement these changes, their understandings tended to miss the intended *functions* of the reforms, focusing instead on surface *forms* of the reform (Spillane, 1999). These form-focused understandings tended to focus on piecemeal changes that cut across school subjects and miss the disciplinary particulars of the reforms. If district leaders don't understand the spirit of the mathematics standards and they make decisions based on these "miss-understandings" it is difficult for them to implement the standards in ways that are consistent with their intent. Still, district leaders' ability to support teachers' implementation of the standards also will depend on how they communicate their understandings of the policy message(s) to teachers, that is, their beliefs about and knowledge of teacher learning and change. One's understanding of a policy message does not ensure that one

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does a decent job of helping others understand that message. That is the issue that this paper addresses.

Method

This paper is based on data from a five-year study that examined relations between state and local government policymaking and mathematics and science instruction. The study investigated the instructional policymaking in nine Michigan school districts (Spillane, 1999). It also examined the effects of national, state, and local policies on teaching in these districts (Spillane, 1999; Spillane and Zeuli, 1999). The study employed quantitative and qualitative methods, including interviews, observations, and surveys.

Site Selection

For the school district component of the study, I selected districts based on characteristics such as their geographical location in the state, district size and urbanization, social and ethnic demographics of student population, and the district's reputation for instructional innovation (See Table 1). Interviews with knowledgeable observers of the school system were used to select five districts with reputations for instructional innovation. Without some districts that were engaged in instructional reform, I would have been unable to get a sense of the approaches and activities that "active use districts" (Firestone, 1989b) were pursuing.

Table 1. Characteristics of School Districts

	Student Enrollment	Students Eligible for Free and Reduced Price Lunch	Ethnic Minority Population	Community Type
District A	19,000 - 26,000	50 - 65%	40 - 50%	Mid-sized City
District B	19,000 - 26,000	50 - 65%	over 60 %	Mid-sized City
District C	1,000 - 5,000	50 - 65%	over 60%	Mid-sized City
District D	10,000 - 18,000	5 - 10%	less than 5%	Suburban
District E	5,000 - 10,000	10 - 20%	5 - 10%	Suburban
District F	1,000 - 2,000	10 - 20%	Less than 5%	Rural
District G	500 - 1,000	30 - 40%	Less than 5%	Rural
District H	500 - 1,000	70 - 80%	20 - 30%	Rural
District I	less than 500	40 - 50%	less than 5%	Rural

Data Collection

State level data collected between 1989 and 1996 included interviews with state policymakers, state legislation, department of education and state board policy documents, state board meeting minutes, and media reports. District data included interviews with local leaders; local policy documents including curriculum guides, annual reports, and policy statements; and listings of professional development workshops. Beginning with the mathematics and science specialists in each district, a snowballing technique was used to identify local educators who were involved in the instructional policymaking process for interviews. Those interviewed in each district included district office and school administrators, teachers involved in developing instructional policies, local school board members, and parents. Between September 1994 and August 1995, we completed 165 interviews, ranging from 13 in one rural district to 32 in one urban district.

Interview protocols were used to ensure that comparable data was collected across the nine sites. These protocols included questions about general characteristics of the school district, the extent and nature of district efforts to reform mathematics and science, the ideas about mathematics and science instruction supported by district reform initiatives, and the role of state and federal policies in district reforms. Interview questions were open-ended. Interviews ranged from 45 minutes to two hours; all but two were tape-recorded and transcribed. Based on an analysis of first round interviews (collected in fall 1994), a second round of data collection was undertaken the following spring. District leaders were asked a series of questions to get at their beliefs about instructional change and teacher learning as part of a broader conversation about standards and efforts to implement standards in their district.[1]

Data Analysis

After analyzing interview and document data early in the study, we developed working hypotheses, which we pursued in our second round of interviews (Miles and Huberman, 1984). Researchers met regularly, reading and responding to interview transcripts and draft cases and raising questions about interpretation of the data. All interview data were computer coded. Five categories were used to code first-round interviews: background information on the site; ideas about mathematics and science supported by district policies; consistency, authority, power, and authority of local policies; teachers' opportunities to learn about instruction in the district; and local perspectives on state and federal policies. Second-round interviews were coded for local educators' understandings of mathematics and science for all students, mathematical problem solving, hands-on science, and parental involvement.

For the purpose of this paper, we also reanalyzed interview data with those district leaders in the sample who took a central role in selecting or designing learning opportunities for teachers. Initially, we identified all passages that focused on instructional change and teacher learning from the interview transcripts of those 40 administrators, lead teachers, and curriculum specialists who were involved on a regular basis in promoting instructional change in their district. In other words, we did not just focus on district leaders' response to those questions that focused explicitly on their beliefs about teacher learning and instructional change but looked at their entire transcripts for relevant data. We then coded the data for each informant using four categories that focused on their beliefs about *teaching* teachers, teacher *learning*, the *curriculum* for teacher

learning, and *motivating* teachers to learn and change. Two researchers then coded these data using three categories□ behaviorist, cognitive, and situated□ in order to categorize each informant's theories about instructional change and teacher learning.

Crafting Opportunities for Teacher Learning and Change: The Perspectives of District Leaders

The nine school districts in this study used four formal channels to shape classroom teaching and learning: curriculum guides, curricular materials, student assessment, and professional development. Policy alignment□ including vertical alignment with state policies especially state learning objectives and student assessment instruments□ was a popular strategy in districts working to provide more coherent guidance about mathematics and science education for teachers (Spillane, 1999). Curriculum guides were at the core of these alignment efforts with districts developing (and in some cases purchasing) district-wide curriculum guides for mathematics and science education that approximated Michigan's Essential Goals and Model Core Curricula. Further, districts were aligning their curricular materials with their curriculum guides. In six of the nine districts, these alignment initiatives focused on the mathematics and science *topics* to be taught rather than on the *substantive* reform ideas (Spillane, 1999). By substantive reform ideas, I mean transforming instruction and reconceptualizing what counted as mathematics and science knowledge by refocusing the curriculum to emphasize more intellectually rigorous content. Leaders in some districts also used informal strategies to press for changes in classroom teaching, including teacher recruitment and selection and encouraging teachers to participate in state curriculum committees.

Focusing on district leaders' theories about instructional change, my analysis goes beyond the structural features (e.g., time, format, subject matter focus) of district professional development to explore district leaders' thinking about teacher learning and change. Such a focus is important because structural aspects of professional development alone are unlikely to provide a good gauge of its likely effectiveness. Rather, what is key is the *pedagogy* and *content* of professional development (Ball, 1994). Moreover, generating alternative models of how "innovative" districts organize to promote instructional change, though crucial, is unlikely to be sufficient to help other districts reconstruct the pedagogy and content of their professional development programs. If previous implementation scholarship is correct, these alternative models are likely to be adapted by other districts in ways that miss or misconstrue their pedagogy and content. These models are likely to be "lethally mutated" (as cited in Bron and Campione, 1994) when transferred to other districts because district leaders filter them through their existing beliefs. An important issue then concerns district leaders' theories about teacher learning.

Most district leaders in our study thought that professional development was crucial if teachers were to implement the mathematics and science reforms. When asked what it would take to change teaching, they invariably said more professional development. District leaders' theories about instructional change and teacher learning fell into three perspectives□ the quasi-behaviorist, the situated, and the quasi-cognitive (See Table 2).

Table 2. District Leaders' Theories of Teacher Learning

	Situated	Quasi-Behaviorist	Quasi-Cognitive
Teaching and Learning	Constructing knowledge Key role of teacher leaders and regular teachers Active learner Social aspects of learning stressed	Transmission of knowledge Passive learner, listening and watching Learner understood in terms of preferences	Creating opportunities for teacher reflection on practice Reconstructing existing knowledge Learner as individual
Curriculum	Topics integrated around implementing reform agenda Internal and external providers Curriculum stretched across artifacts including teachers' practice	Broad spectrum of weakly integrated topics often chunked into broad domains Reliance on external providers	Narrow array of topics integrated around implementing reform Internal and external providers Numerous artifacts including local curricula
Motivation	Social rather than individualistic Tied to learners' identities as inquirers	Extrinsic Combination of rewards and sanctions	Extrinsic and intrinsic Focused on individual

A Quasi-Behaviorist Perspective[2]

The quasi-behaviorist perspective was the most prevalent perspective on teacher learning, with 34 of the 40 district leaders in our study, 85 percent, supporting this perspective.[3] This perspective resembled the "training paradigm of professional development" documented in previous scholarship (Little, 1993).

Teaching and Learning. District leaders in the quasi-behaviorist category believed that teaching teachers centered on the transmission of knowledge from expert to novice. As one district curriculum specialist explained, "We filter the information down to them . . . we can disseminate the information down to the teachers." Telling and showing were the primary modes of instructing teachers with the flow of information being unidirectional from expert to the teacher as learner. Knowledge was treated chiefly as a commodity that could be deposited in the minds of teachers through demonstrating or telling. The role of the learner was relatively passive, that is, to listen or watch so that they could commit new skills to memory and their practice. Learning involved remembering and following the advice one was offered. One district leader remarked, "Teachers . . . need to have some new ideas brought in and demonstrated in their classroom . . . and have someone else do the demonstration." Another noted, "I think teachers will become receptive when they see that it works. And it is a matter of bringing to them a picture of it working." Another district leader remarked, "It is my job to give workshops within the district . . . to demonstrate how they [teachers] can use these manipulatives, what they can do with them in their classes. We go into classrooms for demonstration lessons with the students so that they [teachers] can see." A similar perspective was offered by another district leader, "One of us goes in [to

the classroom] and usually what we do is . . . we are really modeling how the teacher needs to be moving through that room as the kids are doing it. . . . We are doing it to increase the skills of the teacher. And saying, . . . 'you can do it.'" Pictures, in the form of classroom demonstrations were ways of transmitting alternative instructional approaches to teachers.

District leaders in this category mostly understood the teacher as learner in terms of their preferences for professional development. As one local leader noted, "They [teachers] started coming up with topics that they thought we should address in staff development sessions and I did have a little money at the time that I could afford to bring in some resources from the university level and some from industry." Another offered a similar view, "We've made staff development a priority in the district. I don't think there's been a math or science request turned down in the last two years. If somebody wants to go and find out about something, we get 'em there." There was no acknowledgement that teachers' learning might depend on their prior knowledge and experiences nor that teachers' learning opportunities needed to be tailored to their knowledge. Engaging teachers as learners on the level of their preferences is different from engaging them on the level of their prior knowledge, beliefs, and experiences.

Experts who were the transmitters of knowledge for instructional change included external consultants, district specialists, and local teachers who had received specialized training. External consultants were especially important. As one district leader said, "I think, probably what I need to do is to get one of those individuals in here out of California someplace to talk with the group so it's more first-hand." Another commented, "Next Wednesday [external consultant] is going to be up here for the day, talking about assessment in mathematics . . . she's going to have a lot to offer us . . . and they're [teachers] going to get some exposure." Trained by external experts, local teachers also were seen as a source of knowledge for their peers, passing on knowledge they acquired elsewhere in demonstration lessons and workshops.

> *As part of going to staff development the requirement that . . . when they're [teachers] done, they have to fill out something for this office that tells me what they gained there and what effect it's gonna have on their teaching practices. And when are they gonna present it [what they learned] to colleagues. And so we want to maximize our dollars for staff development.*

A similar perspective was expressed by another district leader, "Our teachers are conducting them [teacher workshops], the teachers who know the software are training [other teachers] . . ." The assumption in these statements was that local teachers could learn a new approach and then bring that knowledge and expertise back to the district and pass it on to peers.

While telling and showing was the dominant instructional mode when it came to teaching teachers, district leaders in the quasi-behaviorist category typically believed that more than a single professional development workshop was necessary if teachers were to change:

> *What does not work is training that's on the teacher's own time, where there's no real support for what they're doing in the classroom. Even the one-day workshops that we do where they get a big fat notebook and a bunch of materials to take back, [will] still re-*

> *quire follow-up and I think that somehow we need to find more time for teachers to get training and to get paid for it. I think that's the bottom line.*

Sustained opportunities for teachers to learn, accompanied by other supports, were important.

The Curriculum for Teacher Learning. For informants in the quasi-behaviorist category, the curriculum for teacher learning included workshops and in-class demonstration lessons conducted by either external or local experts, videotapes of teaching, and curricular materials. The content of this curriculum covered a broad spectrum of topics including content knowledge, pedagogical knowledge, training in generic teaching strategies, and knowledge of materials and technology (e.g., manipulatives, graphing calculators, computers). The teaching practice of local teachers, however, was rarely seen as an integral part of the curriculum for teacher learning.

Fragmentation was a striking characteristic of the content of the teacher learning curriculum from the perspective of those in the quasi-behaviorist category. District leaders talked about teaching teachers an array of topics that were integrated only at a very general level.

> *It takes training, on how-to, training on the computer, training on the graphing calculator, training in cooperative learning, training on activities that you can do . . . you can't just know all of this, somebody has to show you how. So . . . we . . . send teachers to workshops or [we] bring people into present workshops.*

> *We've done . . . cooperative learning. We've worked them [teachers] in outcome-based education. . . . We're looking at . . . going into authentic and performance based assessment and really the object is to have the teachers as the trained assessor and using the teacher as the primary assessment tool for instruction. Now, that's gonna take a lot of training.*

Another district leader noted, "They [teachers] are going through outcome-based education. They are learning how to set up learning centers. They're learning how to do cooperative learning . . . and for the preschool level you have a lot of staff development on developmental appropriate practice." The curriculum for teacher learning consisted of a melange of discrete topics, including outcomes-based education, classroom management, cooperative learning, and alternative assessment, that were not integrated in any meaningful way. District leaders made no reference to how these different components of the curriculum for teacher learning might be integrated into some coherent body of knowledge about teaching.

It was not that district leaders entirely ignored the coherence of their curriculum for teacher learning, but coherence was mostly understood at a very broad level. For example, professional development that helped teachers learn about preparing their students for taking the mathematics component of the Michigan Educational Assessment Program (MEAP) was one way that some district leaders spoke about integrating their curricula for teacher learning:

> *We have a manipulative resource library in the elementary school. Everything, we have everything recommended by the state for every grade level on a check-out system in that library. If it was listed by the state, it's there and so we know we have the things we need*

> *to use to teach our kids and I think that's real important, that you don't ask teachers to do what they're not prepared to do.*

From the quasi-behaviorist perspective on teacher learning, knowledge was treated in separate chunks[] content knowledge, knowledge about teaching strategies, knowledge about materials and technology[] and would then be somehow used by teachers, perhaps in some integrated manner, in their practice. This knowledge was broken into different categories, often by external professional development providers, and there was little acknowledgement that teachers might need help in integrating the different pieces of knowledge. Indeed, district leaders often viewed teaching teachers as raising their awareness about an array of new ideas. As one district leader said, "All the teachers there were getting their feet wet with graphing calculators and they, I think, they had a good in-service. . . . He [external consultant] talked about teaching strategies, talked about the pedagogy, we did . . . a lot of hands-on." Breadth rather than depth of coverage appeared to be the major focus.

Motivation. District leaders in the quasi-behaviorist category understood teacher learning as dependent on external motivation through the use of a combination of rewards and sanctions. One district leader commented, "Well, there is a certain amount of resistance at times. Many of them will indicate that they are interested; however, in actuality, very little change takes place in the room." Another noted, "Many of them [teachers] are saying, well, I really don't want to be involved in this because I won't be here that much longer, so we still have to try and make it interesting to pull, pull those senior teachers in." Another district leader expressed a similar view, "Fearful of change and thinking they [teachers] can ride it out 'cause many of them have high seniority and are nearing the end and it's almost too much work to go." Another identified inertia as one of the chief barriers to changing practice:

> *They know it from my mouth and they know it from stuff I've given them to read that teaching this way makes it better for the student. What it will take for them to really . . . act on it, . . . it is going to take, unfortunately, for some people forever, and some people will change, others will not, just because they've been locked into that pattern for too long.*

In this view, resistance and inertia were the primary challenges for teacher change and learning. To address teacher resistance and inertia, district leaders in the quasi-behaviorist category believed that a variety of policy levers were essential in motivating teachers to learn and change. The motivational levers identified included monitoring instruction, state assessment instruments, and resource allocation. One district leader noted, "Right from the beginning we [said we] will support strong educational practices and that they will be monitored. One of our problems is I think with many districts, we have the curriculum, if it isn't monitored, it isn't taught . . . ." Monitoring instruction was one way of motivating teacher change and learning. State assessment instruments were another:

> *With the state-mandated curriculum, we have a perfect way to make sure that it [local curriculum] is monitored and the state will do it for us. The state is going to be monitoring the success rate on the proficiency. If they do not receive endorsed diplomas, it is going to come right back to where were you teaching this when.*

> *But the trick is going to get the teachers to value it and change . . . I think the state's framework is providing a structure . . . for that to happen, because there is no again, escaping. We are going to be responsible and accountable for teaching in this way, because students are going to be questioned in a way that requires them to do that.*

A third form of external motivation identified by district leaders concerned the materials and professional development opportunities available to classroom teachers.

> *If I see a purchase not relating to what we are supposed to be doing. Or if I have an opportunity to buy something that promotes the content things that we are talking about, then I can do that. Ah, what little purse strings I have to reward the teachers for trying things, to going to conferences, . . . using materials that support what we want them to do. I use it! I'm not going to spend the little money I have on people or on ideas that don't do that.*

These district leaders used their control of funds for materials and professional development as a way to motivate teachers to change and learn.

A Situated Perspective

Five of the 40 key district leaders in our study, 12.5 percent of those in our sample, expressed a situated perspective on teacher learning and instructional change. The situated perspective, which contrasted sharply with the quasi-behaviorist perspective on teacher learning, curriculum, and motivation, was especially prominent among local leaders involved in reforming mathematics instruction in one rural district. There was evidence that this perspective was emerging, though not nearly as well developed, in another rural and one urban district.

Teaching and Learning. District leaders in the situated category identified local and outside experts as important agents in the teacher learning and instructional change process. A striking difference between this perspective and the quasi-behaviorist perspective, however, was the role accorded teachers. District leaders who supported a situated perspective assigned teachers an active role in their own learning: local teacher leaders were viewed as central agents in the education of their peers, and the teacher as learner was actively involved in conversations about teaching and identifying learning needs.

District leaders in this category believed that local teacher leaders were especially important in enabling teacher learning and change.

> *You have to have teacher leaders who will . . . challenge one another . . . you have to have people who . . . will confront one another and who will question one another in a positive, professional way and say, what are we doing. Is this working? Why are we doing this? And talking about the things that go on in the classrooms every day.*

> *You enable teachers who want to change, putting them in a position where they can do that, . . . moving them with a group of people that will go with them . . . It's almost like an art form. You sort of have to listen to those involved and encourage the ones who can*

> *run to run and then help the others try to catch up when they want to and work around those who don't.*

Lead teachers were important because they were situated in teaching practice while simultaneously having in-depth understanding of the reforms to help other teachers translate reform ideas into practice.

From the situated perspective, the exchange of ideas among regular classroom teachers was understood as an important occasion for teacher learning. Teachers could, under the right circumstances, learn from each other. A district leader explained:

> *I would push for teachers to have release time to go watch one another, push for the conversations to happen. For example, in August before school started, our four/five [grade] teachers got together. Now, the four/five teachers have now been together for four years and gone through, they went through a two-week training. Then the second year they went through a one-week training. This year . . . they were together again for three days.*

This district leader elaborated:

> *It all goes back to the culture . . . as a classroom teacher when my door is closed, I do what I wanna do. And that's the culture we're trying to change. No, we are a community of learners just like your classroom is a community of learners. . . . And I think if we had more time for that, change would happen more readily.*

Conversations among peers provided opportunities for teachers to grapple with the meaning of reform proposals and develop an appreciation for what these proposals mean for practice. A teacher leader in this district recounted an experience with a mentor remarking, "He was always focusing on the kids . . . 'What do you think went well today? Who do you think was insightful and what is your evidence? And who do you think is struggling and what is your evidence?'" What is striking is that the mentor's role was not so much to tell or to show the teacher what to do, but to ask questions that pressed the teacher to reflect on and rethink mathematics instruction. The teacher leader noted how this experience helped her see aspects of instruction not previously noticed and to listen to students' ideas: "As I started to listen, there were two things that happened. I found out my kids knew a lot more than I thought they knew, but they also had a lot more gaps than I realized they had, things that I had taken for granted that weren't there." Listening to students helped the teacher leader learn about and change mathematics instruction. Another teacher corroborated these accounts pointing out that conversations with peers about practice helped them learn and develop as teachers.[4]

> *I think that part of it is developing through trial and error and learning about other things, and part of . . . what has been so important has been our discussion. We have a professional group of people who are willing to get together and talk about ideas and share ideas and talk about failure and successes so we can help each other grow.*

In this view, changing the culture of schools so that teaching is a more public practice, open to regular discussion among peers, was an important way of promoting teacher learning and change.

Learning focused not only on understanding reform ideas but also on translating these ideas into practice and figuring out how to manage the practical challenges that emerged in the process:

> *About four years ago, another teacher that taught math here, she came into my room for, oh I don't remember how many weeks it was, let's say like four weeks. And she taught math everyday in my room . . . and that was really helpful to me with watching another teacher questioning and getting conversation going and getting kids involved. That helped me a lot . . . collaborating with other teachers that are open and willing and ask questions.*

Participating in discussions about practice, teachers were active agents in their own learning.

The Curriculum for Teacher Learning. District leaders who supported a situated perspective saw the curriculum for teacher learning as involving an array of artifacts that include not only state and national standards and professional development workshops, but also the curricular materials teachers used, teachers' practice, and students' work. There were at least two differences between the quasi-behaviorist perspective and the situated perspective with respect to the curriculum for teacher learning. First, the curriculum for teacher learning was designed not only to support teachers' learning about the reform ideas as embodied in experts' proposals, but also to support their learning about these ideas as translated into teaching practice. The curriculum supported grounding teacher learning both in the reform proposals and *simultaneously* in teachers' efforts to enact these ideas in their practice. Second, classroom curricula, teaching practice, and students' work were understood as central components of the curriculum for teachers' learning.

District leaders who expressed a situated perspective saw teachers' daily practice and their efforts to transform that practice as an important component of the curriculum for teacher learning. A lead district mathematics teacher explained, "She [mentee] came in my class a lot . . . I kept saying whenever you can, come into my room and we can talk about it." Learning involved teachers participating in inquiry and reflection about their practice and in solving pedagogical problems that were meaningful to teachers as learners. These conversations, grounded in teachers' own attempts to reform practice, were understood as opportunities for teachers to work together to figure out what practicing the reforms might involve. They afforded opportunities for teachers to gain the insights of others on the practical problems of putting reform ideas into practice and to construct solutions to these problems together. From this perspective, knowledge was not so much a commodity imported through the words and deeds of experts. Rather, knowledge was in part constructed through the reflection and thinking enabled by the interaction among peers about their practice and guided by the ideas and questions posed by experts. Even when teacher learning opportunities were organized outside the school, teaching practice and students' work were central components of the curriculum:

> *The kids are there for two hours during the training and then the rest of the training. We do . . . a lot of talking about what we've just done . . . we talk about . . . the actual materials . . . and the teaching techniques. . . . We do a lot of talking about the NCTM standards . . . and the research. . . . and that kind of thing, too, and . . . try to integrate all of those . . . things. . . . Then, we also give them the materials that they will need to teach that unit.*

> *There's the formal training in the summer. There are the meetings that go on throughout the school year where they talk about those issues. There's the peer coaching and they go in and coach and watch one another. Then the piece where you go outside of your district and maybe take a course, or three or four of our teachers have been involved in study groups at [local university], which they say has affected their teaching tremendously. Also things like the Connected Math Project is a national project, but we have . . . four teachers this year that are gonna go one day a month with other teachers who are teaching the Connected Math Project. So there's time away from your classroom [to] reflect and think about how you're teaching and what you're teaching with the materials.*

From the situated perspective, the curriculum for teacher learning supported ongoing inquiry about the ideas advanced in reform proposals *and* about what these ideas involved for day-to-day mathematics practice.

> *First of all is understanding the concept. . . . they [teachers] wanna know, what are the questioning techniques? What are the questions I have to ask kids? . . . But you have to understand the content first in order to know what those questions are and . . . how do we develop that conversation? How do we get the kids . . . to talk about it?*

> *Content is very important. And they need to know the process. And when I say process, I mean what are the activities we take the kids through? What are the kinds of questions that we ask? . . . It's the staff development that pulls all of those things together.*

The content of the curriculum, then, included not only subject matter knowledge and pedagogical content knowledge, but also the practical knowledge necessary to get reform ideas into practice.

Implicit in the situated perspective on teacher learning and instructional change, as expressed by district leaders in our study, was the idea that the curriculum for teacher learning was stretched over an array of artifacts and events (Rogoff, 1990). These artifacts and events *taken together* formed an integrated curriculum for teacher learning. From the situated perspective, the curriculum for teacher learning was spread across students' work, national standards, classroom curricular materials, and teachers' attempts to implement the standards in their practice. The result was that the curriculum was integrated with teachers' attempts to implement the mathematics reforms in their practice. In contrast with the quasi-behaviorist perspective, those district leaders who supported a situated perspective emphasized coherence in teachers' learning opportunities. For example, the mathematics curriculum that teachers used in their classrooms, which embodied the reform ideas, was as an integral component of the curriculum for their learning providing

common reference points for teachers' conversation about the reforms. One lead mathematics teacher talked about the mathematics curriculum:

> *Having the curriculum material was a huge factor in creating this change because it gave people a different model. . . . it was really hard to be a traditional teacher with those curriculum materials, because there weren't 35 problems on page homework to support that. So you had to think about, what did it mean to know . . . the questions that were given as somewhat homework worksheets were so much different in that there were maybe three or four on a page and they were much bigger questions . . . And so that, in turn, caused a lot of other conversations [among teachers] to happen. . . . We spent a lot more time talking about questioning, talking about expectations.*

The mathematics curriculum, as implemented by teachers, became an integral and integrating component of the curriculum for teacher learning. The teacher learning curriculum was not divided up among professional workshops, teacher discussion groups, classroom curricula, and state or national policy documents. Rather, it was *stretched over* these artifacts and events. Indeed, district leaders who supported a situated perspective placed a premium on coherence and continuity in teachers' learning opportunities:

> *We don't bring in this speaker one year and another speaker another year . . . We try to have an ongoing project . . . for instance, in math . . . we've been doing the math portion for seven years now . . . and what we try to do . . . is work with a group of teachers at one time. . . . And we have a model where we bring them in for two weeks . . . use a model unit curriculum unit from . . . from wherever . . . and do training on that . . . bring kids in.*

Motivation. District leaders who expressed a situated perspective saw the motivation for teachers to learn and change in teachers' developing and sustaining identities as knowers and learners in their school communities. In other words, the motivation to learn and change centered chiefly, though not exclusively, on developing and sustaining teachers' identities as experts and learners in their community of practice. Teacher leaders had numerous opportunities in their day-to-day interactions in school to challenge their colleagues. An administrator remarked that "we have strong teacher leaders in mathematics in each of our buildings . . . who push it [reform] all the time. That is one huge factor." Creating a critical mass of teacher leaders who convinced other teachers that the new ideas about mathematics education were legitimate and important for students was understood as crucial for instructional change. Peer encouragement motivated teachers to reform their practice. One teacher remarked: "_____ [was] . . . just dragging us along. She dragged ____ and got her involved and _____ dragged _____ and now we're all dragging others. I guess because, you know, it was a teacher-initiated kind of thing and teachers are willing to get busy and get involved in it." Indeed, according to one administrator, the success of this strategy in mathematics was such that science teachers wanted to adopt a similar approach: "When science teachers saw what ____ was doing and the support she was getting, they wanted to be in the limelight as well so they started rethinking their curriculum."

Trying out new ideas in their classrooms, with the support of colleagues in ironing out the implementation problems, and observing the response of students introduced a second incentive for

change. Teachers in this district reported noticing changes in students' learning and claimed that their expectations for what students were capable of doing mathematically had changed. One teacher remarked, "I see it with the kids. They just come up with things that, years ago we probably wouldn't have thought they were capable of. They have a lot more mathematical sense than what we give them credit for." Another teacher said, "They [students] can feel confident [about mathematics] and I do, I do see kids that are not necessarily the best students but still they feel confident and aren't afraid to take the challenge on, even if they don't necessarily succeed at it 100 percent or whatever." Still another teacher offered a similar perspective, "Making changes in math has helped make me a better teacher. I am a better listener. I listen to what the kids have to say . . . one of the things that I have learned is that there is a lot that I don't know, a whole lot that I don't know about mathematics . . . and maybe about the teaching too." Undertaking changes in teaching within supportive communities of practice, teachers created conditions that enabled them to learn from their classroom communities. Listening to students' talk and work, teachers became more aware of their learning needs. Observing students' interest in and success with mathematics, teachers were motivated to continue with their reform efforts. District leaders who expressed a situated perspective did not ignore extrinsic motivation. They applied pressure to teachers who were resisting reform. A number of them mentioned using state policies to press those teachers to take reform initiatives seriously.

A Quasi-Cognitive Perspective[5]

Only one district leader in our study, a suburban district science coordinator, expressed a quasi-cognitive perspective on teacher learning and instructional change. There was some evidence that this perspective was emerging among three or four other district leaders in other districts, though it was not well developed. Holding views more like the situated than the quasi-behaviorist perspective, the district leader who expressed a quasi-cognitive perspective focused mostly on the individual teacher learner and paid less attention to social aspects of that learning.

Teaching and Learning. The district leader in the quasi-cognitive category believed that teacher change and learning was enabled through teacher reflection on existing knowledge, experience, and practice. Teaching involved challenging teachers' current thinking and guiding them toward new understandings. The major difference between this perspective and the situated perspective was that the thinking and reflection was an individual rather than a social or group process. A key goal for the sole district leader in this category was for teachers "to see themselves as learners." The district leader believed that addressing one set of teacher needs created the conditions that enabled teachers to identify other learning needs. For example, the district leader explained that addressing teachers' requests for better classroom materials created the conditions for teachers to identify new learning needs: "The real heart of the problem is you can't teach what you don't know, but you don't know you don't know when you are just jumping through . . . a textbook and they [students] are filling out work sheets and . . . the kids play the game." The local leader added:

> *'You give me the stuff [curricular materials] then I can teach science the way it should be taught.' So you get the stuff and you give them the stuff. Then, other problems start to surface once the novelty has worn off or once you start really looking at some of the*

> *practices . . . and it camouflages itself first because I don't think people [teachers] realize the real problem.*

In this district leader's view, teachers' attempts to implement new curricula, coupled with her conversations about practice with them, enabled teachers to appreciate their learning needs. Similar to the situated perspective, students' thinking as exposed by new curricula materials was understood as important in helping teachers to appreciate their learning needs. This district leader understood the role of teacher educator as "peeling the layers back" so teachers could gradually develop an appreciation of what they needed to learn in order to revise their science teaching. From the quasi-cognitive perspective, learning involved teachers in reconstructing their existing knowledge and beliefs, rather than the passive assimilation or rote memorization of new knowledge. This district leader remarked, "So I begged and pleaded with the teachers, 'If I come in with not even pencil or purse in hand, let me just kind of visit your class, just so I can see what elementary schools are like.' And while doing that on my own education, I learned and saw so much." This district leader saw teachers' prior knowledge and practice as central in creating learning opportunities for them.

In striving to tailor learning opportunities to teachers' needs, knowledge, and experiences, however, this administrator had clear learning goals for teachers namely, a fundamental transformation of elementary science instruction. Thus, while teachers' knowledge and thinking was engaged, it also was challenged in an effort to facilitate the attainment of these goals:

> *Our people [teachers] will start skipping over, 'I'll do activities one and three and five.' I said, 'Wait but unless you have that assessment, even a mental one by asking questions . . . It [the curriculum] is not like a smorgasbord, module units, where you just kind of pick and choose the one that you know and like. You are building a foundation of concepts.' So you discover they [teachers] don't really understand the [building] blocks that you are laying . . .*

Teaching involved using teachers' existing conceptions and understandings to challenge and push their thinking and practice.

Unlike the situated perspective, teacher learning was viewed mostly as an individual affair that took place in the interaction between the classroom teacher and the curriculum specialist about the implementation of particular curricula. The social dimensions of the learning process underscored in the situated perspective were not emphasized by this local leader.

The Curriculum. Similar to the situated perspective, the district leader who support the quasi-cognitive perspective believed that the curriculum for teacher learning should be integrated around the classroom curriculum. The curriculum his teachers follow included workshops, curricular materials, teacher manuals, and videotapes. The content of this curriculum covered subject matter knowledge and pedagogical knowledge for teaching the science curriculum. The district leader remarked, "We want to use those [district science units] to help teachers design their instruction and to see whether or not the kids are getting it and if they [students] aren't, what can you [teacher] do to make sure they are learning." This curriculum specialist also noted, "We have a set of videotapes, 'See What Science Is All About.' It is a wonderful series. And it is for

professional development. I encourage teachers to check it out and before you teach something, look at the section on the videotape on that for background." Moreover, the content of this curriculum for teacher learning was determined by teachers' needs that surfaced in their attempts to implement the curriculum:

> *It is kind of an iterative process that I've gone through in that the bottom line is two big holes. Deficits keep surfacing. Number one is the lack of understanding of the inquiry process itself because you don't get those things in methods type classes or not at all and a lack of knowledge, a lack of understanding of the content itself. And it leads to all of these other limiting factors that aren't really at the heart of the problem.*

The curriculum for teacher learning was developed from teachers' needs, as expressed by teachers and observed by the science coordinator, not just based on their general preferences for professional development or a consideration of the reform proposals for science education.

Motivation. The sole district leader in the quasi-cognitive category believed that engagement with learning involved a combination of extrinsic and intrinsic motivation. Specifically, extrinsic motivators were a way of activating teachers' intrinsic motivation to learn and change. This local science coordinator reported using "ready to use classroom materials" as an inducement to get teachers to revise their science teaching. The materials the student readings, handouts, pre- and post-tests, equipment, and consumable supplies necessary to teach a particular science unit were delivered to a teacher's classroom door, saving teachers the time and effort involved in creating or gathering these materials. The availability of high-interest activities with complete materials and ongoing technical support was portrayed by this district leader as an inducement for teachers to change their teaching. Teachers were not required to use the materials, but they were required to cover the same conceptual material, to meet the same district and state objectives, and to document the materials and methods they used to meet these objectives. Because the units were designed to meet the objectives, teachers who used the kits could complete and sign a checklist included with the materials to show compliance instead of generating their own documentation. According to the science coordinator, this was an added incentive to use these units. Extrinsic motivators inducements of various sorts were viewed by this district leader as insufficient alone to get teachers to learn and change. In the quasi-cognitive perspective, the assumption is that extrinsic motivation would give way to intrinsic motivation as teachers begin to change their practice; the motivation for change will come more and more from within practice.

District Leaders and Instructional Change: Individual Agency and Social Structure

The predominance of the quasi-behaviorist perspective in part reflects dominant societal conceptions of teaching and learning. Teaching is telling, and learning is remembering (Cohen, 1988). An extend "apprenticeship of observation" (Lortie, 1975) to teaching and learning in schooling, home, and other institutions reinforces this perspective for most individuals, including district leaders. Challenging these conceptions is difficult.

Still, district leaders do not operate in a vacuum. Their work is structured in particular ways. These structural arrangements influence what they think and do and help account for the pre-

dominance of the quasi-behaviorist perspective. While these structural arrangements are in some respects endemic to teaching in general, they also manifest themselves in ways that are particular to the circumstances of district leaders. My point here is *not* that these structural arrangements determine what district leaders think and do with respect to teacher learning and instructional change. Indeed, evidence of the situated and quasi-cognitive theories reported here offers existence proof that the work of district leaders is not entirely structurally determined. District leaders can and do challenge the structural arrangements in which they work. My point is that structural arrangements constrain the transformation of district leaders' thinking about and approaches to instructional change. Two aspects of structural arrangements are especially relevant to understanding the prominence of the quasi-behaviorist perspective. The first concerns the nature of teaching as a task, especially relations between the district leader and the classroom teacher. Further, it concerns the ways in which these relations interact with state and local policy environments. The second, closely related set of structural arrangements, concerns the fragmentation of district leaders' responsibilities and functions and the organizational fragmentation that characterized their work situations.

The Teaching Task. One structural issue concerns teaching as a practice, especially relations between the teacher (the district leader) and the learner (the classroom teacher). The teacher-student relationship is fraught with tension (Cohen, 1988; Jackson, 1986; Lortie, 1975). On one hand, if district teachers are to address and remedy their learners' misunderstandings, they must gain their trust before learners will confide their failures to understand what is taught. On the other hand, teachers in most formal settings are also placed in the position of evaluating learners' progress and certifying their competency. These circumstances often encourage learners to hide their deficiencies from their teachers. These tensions are accentuated with cognitive and situated approaches to teaching because instruction is built on and tailored to learners' knowledge and experiences (Cohen, 1988).

The same tensions are evident in relations between district leaders and classroom teachers. Indeed the tensions are accentuated by the manner in which these relations are structured. District leaders who want to facilitate teacher learning and change, especially those using a situated or cognitive approach, have to gain the confidence of teachers if they are to understand teachers' learning needs and build learning opportunities on teachers' prior knowledge and experience. At the same time, district leaders are placed in the position of evaluators of teachers and instructional change. They monitor the implementation of reform initiatives and are responsible for ensuring successful implementation. Thus, teachers often have good reason not to confide in district leaders, covering up their failure to understand new instructional approaches and camouflaging their implementation failures.

Such tension is exacerbated by recent policy developments, especially regarding accountability and the press by state agencies to produce tangible results in the form of student test scores. State accountability mechanisms having tangible sanctions for failure to comply put district leaders in the position of pressuring school principals and teachers to show results. One district leader summed up the situation:

> *They [district] really are putting [on] pressure especially on the principals. The principals are feeling most pressure and, um . .they, they need to come up with strategies . . .*

> *that will improve the [state test] scores at their building level, or they may find their selves in big trouble. . . . You know, when your back is up against the wall . . . you gotta do something . . . administration puts pressure on the principal, the principal on the teachers.*

In putting pressure on principals and teachers to show results, district leaders are less likely to gain the confidence of their teachers/learners. These circumstances work against the use of situated and quasi-cognitive approaches to teacher learning and promote a quasi-behaviorist perspective that does not require district leaders to gain in-depth understandings of teachers' existing knowledge and beliefs. State timelines for compliance also complicated matters for district leaders. Pressed to meet state timelines, they often hurriedly put together programs to support teacher learning. Whether teachers learned and the depth of their learning was often secondary to compliance with state regulations. State policy pressed district leaders to focus more on the content of the curriculum for teacher change than on the needs and understanding of their teachers.

Two additional challenges complicate relations between district leaders and teachers. Getting the sustained attention of the teacher as learner was not an easy task given the multitude of instructional changes in mathematics, science, literacy, and social studies that teachers were expected to undertake. A suburban mathematics coordinator remarked:

> *From a mathematics standpoint, I really don't believe it's really resistance. But one of the things that slows us down, you know, Ann's group or anybody's group, is that we've had in the last five years or so, just a lot of things happen . . . not all necessarily bad. It's just that 15 things are coming at 'em [teachers] at the same time. . . . It seems to me that it's been coming at 'em from so many different ways that, to just wonder which direction am I going. And then you hear some things coming at 'em from a curriculum standpoint because, you know, social studies wants to make some moves and so does the language arts and so does science and so does math and all of a sudden they [teachers] say, 'wait a minute, you know. I can only handle so many of these things at the same time.' I think the biggest thing is that there's been too many things happen, probably most of which are positive but if you get too many things, positive things happening to you, you're overwhelmed. That, to me, is the worse part.*

Teacher overload complicated district leaders' efforts to get their learners/teachers' attention on a particular topic over any sustained period.

District leaders claimed that these matters were exacerbated by changes in the school reform agenda at the state and national levels. They reported that teachers were often reluctant to engage in learning about instructional change because they were skeptical that the latest reform initiative would last very long. District leaders explained:

> *We have shuffled, reshuffled some things so many times in my career in education I would hate to even count, and the end result is, nothing changes in the classroom. They [state] went through the PA 25 and then you change it to something else. The rules keep getting changed. There's, the MEAP test, I don't have a problem with it. I think it's*

> *changed for the better but then, you know, they fooled around with it and tied in diploma endorsements with it. They got into the political end of it which gives people a bad taste and that sets up a resistance that really wouldn't have to be there.*

> *We have . . . a veteran staff. . . . Some will feel that, "Well, I won't need to change because I won't be here that long," then others will feel, "This too will pass." Because we've had so many things that have happened in education . . . you barely have a chance to learn one area then you're changing to something else . . . so sometimes people feel, "I can wait this out."*

Reform fads sapped teachers' desire to change. It bred cynicism about instructional change that did not lend itself to in-depth engagement with learning about instruction. These circumstances lent themselves to a quasi-behaviorist perspective on instructional change because it was much less demanding of teachers' time and energy and enabled an array of different reform topics to be covered, as compared with situated or cognitive approaches.

Fragmentation. Relations between district leaders and classroom teachers were affected by the fragmented nature of district leaders' work and work situations and, in effect, promoted a quasi-behaviorist perspective of teacher learning and instructional change. First, there was the fragmentation of functions that district leaders performed. An analysis of the interview transcripts of the 40 key district leaders in our study suggests that most district leaders had a variety of responsibilities, including grant writing, procuring curricular materials, organizing and carrying out professional development, developing curricula and classroom materials, and completing regulatory paperwork. In smaller districts, local leaders often had a fulltime classroom teaching load. One rural administrator explained, "In a small district, . . . you are a little bit of everything, a teacher is also an advisor and is also the coach and is also the driver's ed. instructor . . . And the principal is also this, this, and this." Another district leader remarked:

> *In a small school system you become a little bit of everything, you're . . . a leader for the staff and you should be a model for the students and at times you're a custodian and a janitor and a little bit of a counselor, etc. . . . Because of the size of the district you don't have assistance in any category, . . . it's my job to facilitate student learning and professional development for staff and throughout [by] programming help [to] facilitate people who are working with new programs, facilitate people by writing grants, facilitate people by budgeting, property, etc.*

Even in larger suburban and urban school districts where mathematics and science specialists were more common, these district leaders were responsible for diverse functions. Enabling instructional change and teacher learning was never the sole responsibility of these district leaders. District leaders reported that, because of their diverse portfolios, the task of educating teachers often fell below their other priorities. As one district leader said:

> *My real passion is working with teachers, so when I have to be in here [district office] and coordinate stuff and can't get out there . . . I miss that part of the job where I really would prefer to go out and work with a few teachers and then say, okay, let me try it with*

> *kids, I haven't done this with children for awhile . . . and you can't do that kind of training and do coordinating too, because time doesn't allow it.*

A quasi-behaviorist approach to teacher learning and instructional change, enabled district leaders to tackle the task of teacher learning and instructional change in a way that reduced the time and energy burden. A situated or cognitive approach to this task would have required much more time.

To complicate matters, the ratio of district leaders to teachers was high. Typically, district leaders had hundreds of teachers to inform about change. One local leader remarked:

> *Part of my job is to go in and provide demonstration lessons and that sometimes is difficult because . . . I'm one person working in the area of language arts with approximately a hundred [teachers]. And to be really effective, if I wanted to go in and demonstrate or talk about something, let's say, in learning styles, it would be nice if I could work with that teacher on a Monday and then perhaps go back in on a Wednesday and follow it up. That really isn't possible with the number of teachers we have at this point.*
>
> *It took us five years to service all of the 32 elementary schools, with six sessions. Because you go in one month, you come back another month and do something else and it's all, and we were trying to do eight and ten schools and we couldn't do it because we simply could not schedule that. We didn't have enough resources in order to do it.*

Under these circumstances tailoring instruction to the learning needs of particular teachers was more difficult. A quasi-behaviorist approach to teacher learning was more manageable than either a situated or cognitive approach because it allowed local leaders to package knowledge so it could be taught more efficiently by one or two consultants to many teachers.

Local organizational and institutional fragmentation also contributed to the prominence of the quasi-behaviorist perspective. In the larger school districts, responsibility for teacher learning was divided among different units in the district office. One urban district leader explained, "We have professional development being done by [the] special education department, by [the] compensatory education department, by curriculum services." In one small suburban district, the math department, the science department, the compensatory education unit, and the professional development unit each had responsibility for teachers' professional development. This division of responsibility for teacher learning meant that different district sub-units constructed separate, and often different, curricula for teacher learning. Further, schools in some districts also had professional development budgets. One district leader noted, "We have change coming in from some of the schools from bottom up and then we have change coming in from central office down and we're advocating the philosophy of a single-tier system but sometimes what we advocate and what we do doesn't necessarily all jive." The result was a curriculum for teacher learning with discrete components for cooperative learning, graphing calculators, alternative assessment in mathematics, using mathematics manipulative, conflict resolution, among others, that were not well integrated. Able teachers might have integrated the lessons they learned from these diverse offerings into a coherent plan for their practice, but that is no easy task.

Smaller districts were much less segmented organizationally. Still, they faced the same fragmentation challenge because of their reliance on outside providers for professional development. Individual teachers choose from the menu of professional development offered by an array of agencies and individuals in the school system and beyond. The State's Education Department, Intermediate School Districts, textbook publishers, universities, private consultants, and professional associations arranged learning opportunities for teachers. Each having their own unique interests and specialization, the providers of curriculum for teacher learning often focused on discrete aspects of teaching, such as using manipulatives to prepare students for the MEAP, alternative assessment in mathematics, or cooperative grouping. The resulting teacher-learning curriculum about mathematics and science education was not well integrated. Thus, the structural arrangements of the education system supported a quasi-behaviorist approach to instructional change.

Conclusion

In this paper, I looked beneath the structures and forms of district professional development programs to examine district leaders' theories about teacher learning and change. Even when district leaders talked about similar professional development forms and structures, their theories of teacher learning and instructional change often differed dramatically. My analysis showed that district leaders' theories about teacher learning and change fell into three categories: quasi-behaviorist, situated, and quasi-cognitive. While the quasi-behaviorist perspective dominated among the district leaders, I did uncover evidence of the two other perspectives. I then argued, based on my analysis of the data, that while the predominance of the quasi-behaviorist perspective reflects dominant societal conceptions of teaching and learning, it also is supported by structural aspects of district leaders' work. Contributing to the predominance of the quasi-behaviorist perspective were the relations between the district leader as change agent and the classroom teacher, the manner in which these relations interact with policy environments, and the fragmentation of district leaders' responsibilities and their organizational environment.

Exploring local theories about teacher learning and change highlights how perspectives on the instructional change process can vary among district leaders. Even when the structural characteristics of the professional development approach advanced in district policies and programs were similar, the local theories about teacher learning and change that these structures were designed to support often differed. Structural similarities in district professional development approaches (e.g., classroom demonstrations, peer coaching) camouflaged substantial differences in the underlying theories of teacher learning and change.

Based on these analyses, I argue that changing the training paradigm that dominates school districts' approach to professional development (Little, 1993) will necessitate challenging district leaders' theories about teacher learning. Specifically, unless reformers create opportunities for district leaders to develop alternative conceptions of teacher learning and change (that is, conceptions that are different from the quasi-behaviorist perspective), the training paradigm is likely to persist. Some case studies of reforming school districts (Elmore, 1995) do provide district leaders with alternative models of professional development. Still, district leaders are likely to adapt these alternative models to fit with their existing theory about teacher learning, that is, a quasi-behaviorist perspective. Unless these models challenge district leaders' underlying theo-

ries of teacher learning, they are unlikely to transform district professional development practices.

There is much that merits further investigation. It would be interesting to replicate this work with a larger, nationally representative sample of school districts. A second issue for exploration is the correlation between district leaders' perspectives on teacher learning and their district's stage in the reform process. Specifically, leaders who supported a situated or quasi-cognitive perspective were found mostly in districts that had been engaged in reforming mathematics or science instruction for four or more years. In contrast, district leaders in the quasi-behaviorist category worked mostly in districts only recently engaged in reforming mathematics and/or science instruction. Although there were exceptions to this pattern, a conjecture that merits further study is that district leaders' beliefs about teacher learning may depend on where their district is in the reform process. Situated and quasi-cognitive perspectives may be easier to support when a critical mass of teachers have some grasp of the knowledge needed to enact the reforms.

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Appendix

Questions that were designed to elicit district leaders' beliefs about teacher learning typically followed questions about their efforts to implement state and national mathematics and science standards and their understanding of these reform proposals.

First-round interview protocols included the following questions:

3.5 Do most teachers teach in accordance with these objectives? How do you know that? If not, why not? How would you go about helping these teachers to change?

6.4 Description of staff development sessions? Why such a format? Do you think this is the best way to teach teachers about that [*mention whatever it is*]? How would you do it differently with unlimited resources?

6.5 How do you hope teachers will teach as a result of these workshops? Do most teachers teach like this? If no, why not? What would need to happen to get these teachers to change? [*Listen for how they view the teacher change process.*]

Second-round interview questions included the following questions asked separately for mathematics and science:

f. Is this [*informant's description of mathematics as problem solving or hands-on science*] a challenge for teachers to start doing this more? Why? Why not?

h. What's your sense of the kinds of support or information or professional development that teachers might need to do more "problem solving" in their mathematics teaching? [*Here be especially attentive for any opportunities that are created for teachers to observe and talk about each others teaching.*]

g. What's your sense of how much this idea [*problem solving*] has permeated your district? Are there a lot of classrooms where you see teachers doing a lot of problem solving or is it still relatively rare?

h. What do you think are some of the explanations for why [*some/ many*] teachers are not doing a lot of this in their classrooms?

i. How would you get them to change?

End Notes

[1] Questions that were designed to get at district policymakers' beliefs about teacher learning typically followed questions about their efforts to implement state and national mathematics and science standards and their understanding of these reform proposals. Samples can be found in the Appendix.

[2] I use the term quasi-behaviorist to denote this perspective because it did not emphasize the sequencing of skills for learners, a defining characteristic of the behaviorist perspective.

[3] District leaders did not use terms such as behaviorist, situated, and cognitive to describe their thinking about teacher learning and instructional change. They used more general and less technical language in talking about their ideas on teacher learning and instructional change.

[4] Teachers played a central role in this district's reform efforts, so we included data from interviews with teachers to corroborate and detail the accounts of district leaders.

[5] I use "quasi-cognitive" here because the view differed from the cognitive perspective as described in the literature in two important respects. First, the cognitive perspective stresses that the motivation to learn is intrinsic. Second, the cognitive perspective underscores the sequencing learners' conceptual development.

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